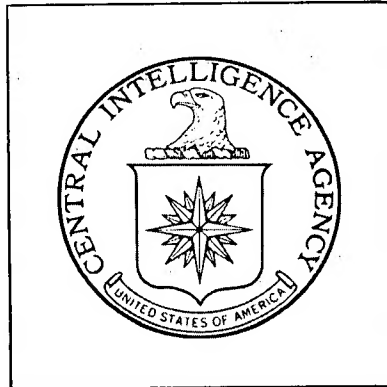


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**DIRECTORATE OF
INTELLIGENCE**

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

Pen-chi Nitrogen Fertilizer Plant

Pen-chi, China



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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME		COUNTRY	
Pen-chi Nitrogen Fertilizer Plant		CH	
UTM COORDINATES	GEOGRAPHIC COORDINATES	COMIREX NO.	NIETB NO.
51TWF588676	41-15-45N 123-42-30E	None	None
MAP REFERENCE			
548th RTG. USATC, Series 200. Sheet M0290-16HL. 5th ed. May 70. Scale 1:200 000			
(SECRET)			
LATEST IMAGERY USED		NEGATION DATE (If required)	

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ABSTRACT

The primary function of Pen-chi Nitrogen Fertilizer Plant is the production of urea fertilizer, utilizing coke oven gas from a nearby iron and steel plant as the feed material. Liquid ammonia and possibly aqueous ammonia are secondary products.

Initial construction activity for the plant was observed in September 1967. Construction proceeded slowly during 1968 and early 1969. After March 1969 the construction rate increased, and by January 1970 the plant was complete and operating.

The plant was in operation in January and December 1970 and November 1971, as indicated by vapors coming from the gas purification and urea synthesis equipment. It was not operating in July 1971.

This report includes a photograph, a process flow chart, a line drawing of the plant, and a chronological summary of construction and operational status.

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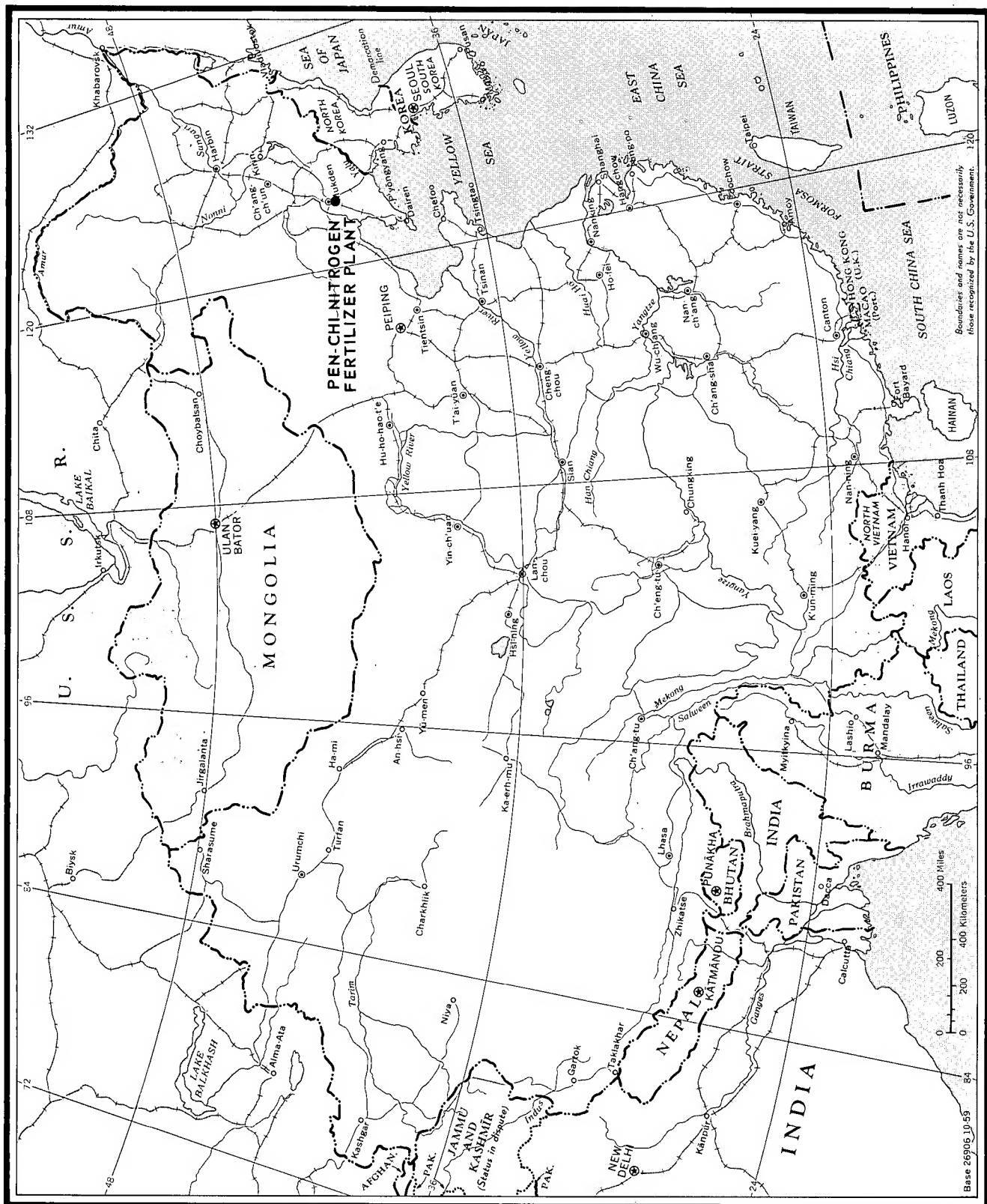


FIGURE 1. LOCATION MAP.

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INTRODUCTION

Pen-chi Nitrogen Fertilizer Plant is located 3 nautical miles southwest of the center of Pen-chi, Liaoning Province (see Figure 1). Steam is available to the plant from the collocated steam plant and from the nearby Pen-chi Heat and Thermal Power Plant Number 3 Steel Plant Electric power is received from the regional grid through a collocated transformer substation. The nearby Pen-chi Iron and Steel Plant Kungyuan is the source of hydrogen and carbon dioxide for the plant.

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BASIC DESCRIPTION

The fertilizer plant occupies 30 acres in an irregular shaped area measuring approximately 1,470 by 840 feet overall (see Figures 2 and 3). It is served by road and by a spur from the Pen-chi to Liao-yang rail line.

Operational Functions

The primary function of the plant is the production of prilled urea fertilizer. Liquid ammonia and possibly aqueous ammonia are secondary products. This plant uses coke oven gas obtained from the coking facilities at the nearby iron and steel plant. This is a new source of feed gas for Chinese nitrogen fertilizer plants and probably represents an effort to conserve coal, which is normally the primary feed material at this type of plant.

The plant is designed to use coke oven gas as the source of hydrogen for the synthesis of ammonia and as a source of carbon dioxide for the production of urea. The coke oven gas may also contain methane, carbon monoxide, oxygen, and various illuminants. These other gases could be used to produce additional hydrogen or carbon dioxide by either reforming or oxidation. It cannot be determined whether any additional processing of the coke oven gas occurs at this plant. Those gases that are not converted would be removed from the gas stream in a purification unit. A possible air separation plant may be the source of nitrogen for the ammonia production. The process flow for the products is shown in Figure 4.

A spherical storage tank present in the liquid ammonia loading facility is a unique feature at this plant. A line of trucks was seen at the loading facility in July 1971. The trucks were probably from local farming communes since railcars have also been observed at the plant, alongside the urea warehouse.

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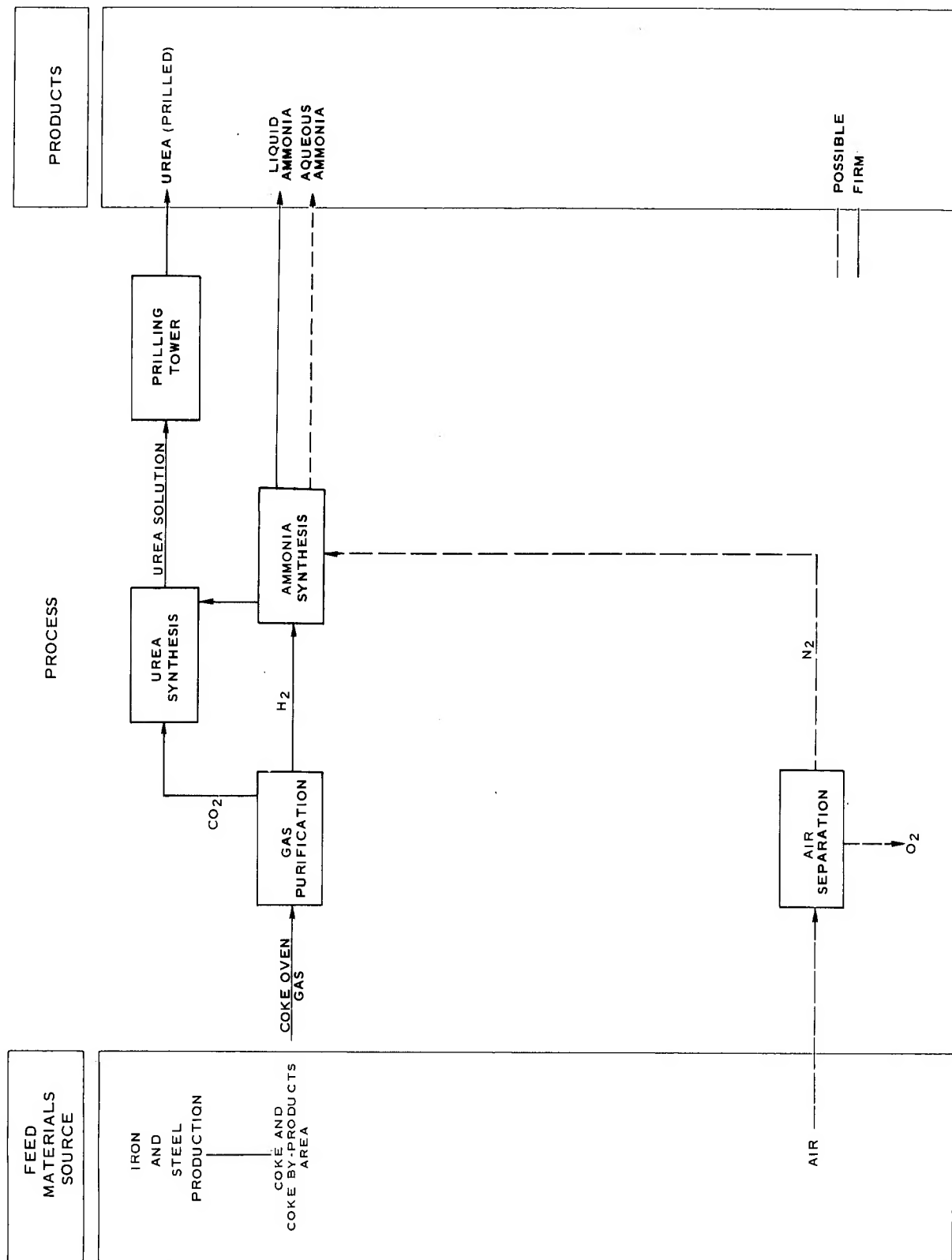


FIGURE 4. PROCESS FLOW AT PEN-CHI NITROGEN FERTILIZER PLANT.

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25X1Construction and Operational Status

Initial construction activity for the plant was observed in September 1967, and by February 1968 several support buildings had been constructed. In March 1969 three additional support buildings were complete, and three support buildings, the ammonia synthesis building, and the urea production facility were in an early stage of construction. Between March 1969 and January 1970 the rate of construction increased. By January 1970, a steam plant, the gas purification equipment, liquid ammonia facilities, and the possible air separation plant had been added and the ammonia synthesis building and urea production facility had been completed. Only minor support buildings have been added since January 1970.

The plant was in operation in January and December 1970 and November 1971. This was indicated by vapors coming from the gas purification and urea synthesis equipment. It was not operating in July 1971.

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REFERENCES

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Map

548th RTG. US Air Target Chart, Series 200, Sheet M0290-16H1, 5th edition,
May 1970, Scale 1:200,000 (SECRET)

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Requirement

COMIREX N07
Support Number 422810

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